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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,212	02/01/2002	Takashi Ishizaka	02-152	5661

7590 09/22/2004
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EXAMINER

SANTOS, PATRICK J D

ART UNIT PAPER NUMBER

2171

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/066,212

Applicant(s)

ISHIZAKA, TAKASHI

Examiner

Patrick J Santos

Art Unit

2171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Examiner suggests the following title: "Data Processing System, Method, and Computer Program to Optimize Joins by Calculating Offsets." However, Applicant may choose a new title that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,457,021 issued to Berkowitz et al. (hereafter Berkowitz '021) in view of U.S. Patent No. 6,009,502 issued to Boeuf (hereafter Boeuf '502).

Claim 1:

Regarding Claim 1, Berkowitz '021 discloses: a data processing system having a storage device for recording data which belongs to an object representing a target event (Berkowitz '021: Abstract), in which one or more tables are stored in the storage device, each of the tables

defining the number of data recordable areas (Berkowitz '021: col. 2, lns. 13-20; col. 16, lns. 24-31 – the look-aside table and transaction information reads on tables), and each of the objects and recording areas in each table individualized by an identifier capable of taking numerical form (Berkowitz '021: col. 16, lns. 32-41 – note the look-aside table contains RECIDs which read on identifiers), said system comprising:

- specification means for specifying an identifier related to the data concerned and the number of recording areas of the table to be accessed in response to a data accessing request (Berkowitz '021: col. 9, lns. 30-36; col. 16, ln. 63 to col. 17, ln. 2).

However, Berkowitz '021 does not explicitly disclose:

- range of area determining means for determining the range of recording areas in the table to be accessed by executing a predetermined computational algorithm which uses as variable factors at least the identifier and the number of recording areas specified by said specification means.

Boeuf '502 discloses:

- range of area determining means for determining the range of recording areas in the table to be accessed by executing a predetermined computational algorithm which uses as variable factors at least the identifier and the number of recording areas specified by said specification means (Boeuf '502: col. 3, ln. 21 to col. 5, ln. 20 – note that the data-wrapping algorithm of Boeuf '502, described in detail in this citation, reads on a range of area computational algorithm).

It would have been obvious to a person having ordinary skill in the art to combine the range determining means of Boeuf '502 with the record manager of Berkowitz '021. The

motivation to combine is suggested by Boeuf '502, which discloses that use of the Boeuf '502 algorithm results in better performance in file management systems such as that of Berkowitz '021 (Boeuf '502: col. 2, lns. 14-26).

Claim 2:

Regarding Claim 2, Berkowitz '021 discloses: a data processing system having a storage device for recording data which belongs to an object representing a target event (Berkowitz '021: Abstract), in which one or more tables are stored in the storage device, each of the tables defining the number of data recordable areas (Berkowitz '021: col. 2, lns. 13-20; col. 16, lns. 24-31 – the look-aside table and transaction information reads on tables), and each of the objects and recording areas in each table individualized by an identifier capable of taking numerical form (Berkowitz '021: col. 16, lns. 32-41 – note the look-aside table contains RECIDs which read on identifiers), said system comprising:

- a data recording module for accessing said storage device and recording data in recording areas of any one of tables in response to input of the data concerned and a data recording request, and a data retrieval module for accessing said storage device and retrieving the data concerned from one of the tables in response to a retrieval request (Berkowitz '021: col. 9, lns. 30-36; col. 16, ln. 63 to col. 17, ln. 2), wherein
- one of said data recording and retrieval modules is configured to specify an identifier related to the data to be targeted and the number of recording areas of the table to be accessed (Berkowitz '021: col. 9, lns. 30-36; col. 16, ln. 63 to col. 17, ln. 2).

However, Berkowitz '021 does not explicitly disclose:

- determine the range of recording areas in the table to be accessed by executing a predetermined computational algorithm which uses as variable factors at least the identifier and the number of recording areas specified, and access the range of areas determined.

Boeuf '502 discloses:

- determine the range of recording areas in the table to be accessed by executing a predetermined computational algorithm which uses as variable factors at least the identifier and the number of recording areas specified, and access the range of areas determined (Boeuf '502: col. 3, ln. 21 to col. 5, ln. 20 – note that the data-wrapping algorithm of Boeuf '502, described in detail in this citation, reads on a range of area computational algorithm).

It would have been obvious to a person having ordinary skill in the art to combine the range determining means of Boeuf '502 with the record manager of Berkowitz '021. The motivation to combine is on the same basis as Claim 1 (supra).

Claims 3-4, and 7:

Regarding Claims 3-4, and 7, Berkowitz '021 and Boeuf '502 in combination disclose all the limitations of Claim 1 (supra). Additionally, Berkowitz '021 and Boeuf '502 in combination disclose:

- (Claim 3) wherein said specification means specifies an object identifier (M) and the number of recording areas (N) per customer of the table to be accessed, and said range of area determining, means determines the range or recording areas capable of being

accessed in the table concerned by executing the following computational algorithm from the identifier (M) and the number of recording areas (N) specified:

$$N * [M-1] + 1 \sim N * M,$$

where the term inside the square brackets indicates an integral value calculated by a Gauss function (Boeuf '502: col. 4, lns. 27-36 and col. 4, ln. 53 – note that the head key calculation reads on the lower bound and the tail key reads on the upper bound; further note that since the OBK (Old Base Key) of Boeuf '502 subsumes all previous records, the calculation of the OBK reads on a Gauss function).

- (Claim 4) wherein, said specification means specifies an identifier ((alpha)a) of a recording area of a first table in which data belonging to the target object is to be recorded, as well as the number of recording areas (Na) per object of the first table and the number of recording areas (Nb) per object of a second table in which data associated with the first object by the target object are to be recorded, and said range of area determining means determines the range of data recording areas capable of being accessed in the second table by executing the following computational algorithm from the identifier ((alpha)a) and the respective numbers of recording areas (Na, Nb):

$$[(\alpha)a / Na] * Nb + 1 \sim [(\alpha)a / Na + 1] * Nb,$$

where the term inside the square brackets indicates an integral value calculated by a Gauss function (Boeuf '502: col. 4, lns. 27-36 and col. 4, ln. 53 – note that the head key calculation reads on the lower bound and the tail key reads on the upper bound; further note that since the OBK (Old Base Key) of Boeuf '502 subsumes all previous records, the calculation of the OBK reads on a Gauss function).

- (Claim 7) wherein the recording areas are formed consecutively in each individual table on a row or column basis, and the identifier is a row or column number in the table concerned (Boeuf '502: col. 2, lns. 14-19 – note data wrapping reads on consecutive recording areas).

Claim 8:

Regarding Claim 8, Berkowitz '021 discloses: a data processing method for use in a computer system having a storage device for recording data which belongs to an object representing a target event (Berkowitz '021: Abstract), in which one or more tables are stored in the storage device on an object basis, each of the tables defining the number of data recordable areas (Berkowitz '021: col. 2, lns. 13-20; col. 16, lns. 24-31 – the look-aside table and transaction information reads on tables), and each of the objects and recording areas in each table individualized by an identifier capable of taking numerical form (Berkowitz '021: col. 16, lns. 32-41 – note the look-aside table contains RECIDs which read on identifiers), said method comprising the steps of:

- specifying an identifier related to the data concerned and the number of recording areas of the table to be accessed in response to an access request for the data containing identification information for identifying the object (Berkowitz '021: col. 9, lns. 30-36; col. 16, ln. 63 to col. 17, ln. 2).

However, Berkowitz '021 does not explicitly disclose:

- determining the range of recording areas in the table to be accessed by executing a predetermined computational algorithm which uses as variable factors at least the identifier and the number of recording areas specified by said specification means.

Boeuf '502 discloses:

- determining the range of recording areas in the table to be accessed by executing a predetermined computational algorithm which uses as variable factors at least the identifier and the number of recording areas specified by said specification means (Boeuf '502: col. 3, ln. 21 to col. 5, ln. 20 – note that the data-wrapping algorithm of Boeuf '502, described in detail in this citation, reads on a range of area computational algorithm).

It would have been obvious to a person having ordinary skill in the art to combine the range determining means of Boeuf '502 with the record manager of Berkowitz '021. The motivation to combine is on the same basis as Claim 1 (*supra*).

Claim 9:

Regarding Claim 9, Berkowitz '021 discloses: a computer-readable recording medium on which a computer program is recorded, the computer program being used in a computer system having a storage device for recording data which belongs to an object representing a target event (Berkowitz '021: Abstract), in which one or more tables are stored in the storage device on an object basis, each of the tables defining the number of data recordable areas (Berkowitz '021: col. 2, lns. 13-20; col. 16, lns. 24-31 – the look-aside table and transaction information reads on tables), and each of the objects and recording areas in each table individualized by an identifier capable of taking numerical form (Berkowitz '021: col. 16, lns. 32-41 – note the look-aside table contains RECIDs which read on identifiers), said computer program executing the following processing steps of:

- specifying an identifier related to the data concerned and the number of recording areas of the table to be accessed in response to an access request for the data containing identification information for identifying the object (Berkowitz '021: col. 9, lns. 30-36; col. 16, ln. 63 to col. 17, ln. 2).

However, Berkowitz '021 does not explicitly disclose:

- determining the range of recording areas in the table to be accessed by executing a predetermined computational algorithm which uses as variable factors at least the identifier and the number of recording areas specified.

Boeuf '502 discloses:

- determining the range of recording areas in the table to be accessed by executing a predetermined computational algorithm which uses as variable factors at least the identifier and the number of recording areas specified (Boeuf '502: col. 3, ln. 21 to col. 5, ln. 20 – note that the data-wrapping algorithm of Boeuf '502, described in detail in this citation, reads on a range of area computational algorithm).

It would have been obvious to a person having ordinary skill in the art to combine the range determining means of Boeuf '502 with the record manager of Berkowitz '021. The motivation to combine is on the same basis as Claim 1 (*supra*).

Claim 10:

Regarding Claim 10, Berkowitz '021 discloses: a computer program for use in a computer system having a storage device for recording data which belongs to an object representing a target event (Berkowitz '021: Abstract), in which one or more tables are stored in the storage device on an object basis, each of the tables defining the number of data recordable

areas (Berkowitz '021: col. 2, lns. 13-20; col. 16, lns. 24-31 – the look-aside table and transaction information reads on tables), and each of the objects and recording areas in each table individualized by an identifier capable of taking numerical form (Berkowitz '021: col. 16, lns. 32-41 – note the look-aside table contains RECID's which read on identifiers), said program constructing:

- specification means for specifying an identifier related to the data concerned and the number of recording areas of the table to be accessed in response to a data accessing request for the data containing identification information for identifying the object (Berkowitz '021: col. 9, lns. 30-36; col. 16, ln. 63 to col. 17, ln. 2).

However, Berkowitz '021 does not explicitly disclose:

- range of area determining means for determining the range of recording areas in the table to be accessed by executing a predetermined computational algorithm which uses as variable factors at least the identifier and the number of recording areas specified by said specification means.

Boeuf '502 discloses:

- range of area determining means for determining the range of recording areas in the table to be accessed by executing a predetermined computational algorithm which uses as variable factors at least the identifier and the number of recording areas specified by said specification means (Boeuf '502: col. 3, ln. 21 to col. 5, ln. 20 – note that the data-wrapping algorithm of Boeuf '502, described in detail in this citation, reads on a range of area computational algorithm).

It would have been obvious to a person having ordinary skill in the art to combine the range determining means of Boeuf '502 with the record manager of Berkowitz '021. The motivation to combine is on the same basis as Claim 1 (*supra*).

4. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkowitz '021 and Boeuf '502 in view of U.S. Patent No. 5,864,842 issued to Pederson et al. (hereafter Pederson '842).

Claims 5-6:

Examiner notes means plus function language in Claims 5-6 as per the three prong test in MPEP 2181. Examiner will interpret claim language in light of the specification, in particular pp. 14-15.

Regarding Claims 5-6, Berkowitz '021 and Boeuf '502 in combination disclose all the limitations of Claim 1 (*supra*). Additionally, Berkowitz '021 and Boeuf '502 in combination disclose:

- (Claim 5) further comprising:
 - retrieval means for executing request accepted, wherein
 - said specification means specifies an identifier ((alpha)a) of a corresponding recording area from the first table on the basis of the retrieval condition decomposed for the first table, as well as the number of recording areas (Na) per object of the first table and the number of recording areas (Nb) per object of the second table (Boeuf '502: col. 4, lns. 27-36 and col. 4, ln. 53 – note that the head

key calculation reads on the lower bound and the tail key reads on the upper bound), and

- said range of area determining means determines the range of recording areas to be retrieved in the second table by executing the following computational algorithm from the identifier (aa) and the respective numbers of recording area: (Na, Nb):

$$[(\alpha)a/Na] * Nb + 1 \sim [(\alpha)a/Na + 1] * Nb,$$

where the term inside the square brackets indicates an integral value calculated by a Gauss function (Boeuf '502: col. 4, lns. 27-36 and col. 4, ln. 53 – note that the head key calculation reads on the lower bound and the tail key reads on the upper bound; further note that since the OBK (Old Base Key) of Boeuf '502 subsumes all previous records, the calculation of the OBK reads on a Gauss function).

- (Claim 6) further comprising:
 - retrieval means for executing the request accepted, wherein said
 - specification means specifies an identifier ((alpha)a) of a corresponding recording area from the first table on the basis of the retrieval condition decomposed for the first table, as well as the number of recording areas (Na) per object of the first table and the number of recording areas (Nb) per object of the second table (Boeuf '502: col. 4, lns. 27-36 and col. 4, ln. 53 – note that the head key calculation reads on the lower bound and the tail key reads on the upper bound),
 - said range of area determining means determines the range of recording areas to be retrieved in the second table by executing the following computational

algorithm from the identifier (aa) and the respective numbers of recording areas (Na, Nb):

$$[(\alpha)a/Na] * Nb + 1 \sim [(\alpha)a/Na + 1] * Nb,$$

where the term inside the square brackets indicates an integral value calculated by a Gauss function (Boeuf '502: col. 4, lns. 27-36 and col. 4, ln. 53 – note that the head key calculation reads on the lower bound and the tail key reads on the upper bound; further note that since the OBK (Old Base Key) of Boeuf '502 subsumes all previous records, the calculation of the OBK reads on a Gauss function).

However, Berkowitz '021 and Boeuf '502 in combination do not explicitly disclose:

- (Claim 5) further comprising:
 - (Claims 5-6) means for accepting a table join request for joining first and second tables associated with each other by an object and retrieval conditions therefor;
 - (Claims 5-6) means for decomposing the accepted retrieval conditions on a table basis;
 - (Claim 5) said retrieval means performs data retrieval processing for the range of recording areas determined by said range of area determining means according to the retrieval condition for the second table.
 - (Claim 6) said retrieval means performs data retrieval processing according to the retrieval condition for the second table to determine the logical product of the identifier of a recording area obtained in the retrieval processing and the identifiers of all the recording areas of the range determined by said range of area determining

means so as to specify recording areas in which data according to all the retrieval conditions are to be recorded.

Pederson '842 discloses:

- (Claims 5-6) means for accepting a table join request for joining first and second tables associated with each other by an object and retrieval conditions therefor (Pederson '842: col. 4, lns. 14-34);
- (Claims 5-6) means for decomposing the accepted retrieval conditions on a table basis (Pederson '842: col. 4, lns. 35-45);
- (Claim 5) said retrieval means performs data retrieval processing for the range of recording areas determined by said range of area determining means according to the retrieval condition for the second table (Pederson '842: col. 4, lns. 46-56; col. 5, lns. 20-50).
- (Claim 6) said retrieval means performs data retrieval processing according to the retrieval condition for the second table to determine the logical product of the identifier of a recording area obtained in the retrieval processing and the identifiers of all the recording areas of the range determined by said range of area determining means so as to specify recording areas in which data according to all the retrieval conditions are to be recorded (Pederson '842: col. 4, lns. 46-56; col. 5, lns. 20-50).

It would have been obvious to a person having ordinary skill in the art to apply the Berkowitz '021 and Boeuf '502 manager to the relational join steps of Pederson '842. The motivation to combine is suggested by Berkowitz '021 which discloses that use of the manager

as in the Berkowitz '021 and Boeuf '502 combination provide optimized data operations such as that of the joins of Pederson '842 (Berkowitz '021: col. 1, lns. 34-50).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- U.S. Patent No. 5,359,724 issued to Earle.
- U.S. Patent No. 6,427,123 issued to Sedlar.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J.D. Santos whose telephone number is 703-305-0707. The examiner can normally be reached on M-F 8:00-4:30.

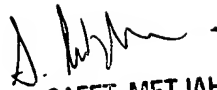
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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September 17, 2004


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